

Quiz 3 — Midterm revision

Questions	Answers
1. [MIDTERM 2021] What is dynamic inefficiency? It is a:	☐ situation in which output per head could be raised at every point in time. ☐ situation in which capital per head could be raised at every point in time. ☐ situation in which the steady state is not Pareto optimal. ☐ situation in which consumption per head could be raised at every point in time. ☐ situation in which the decentralized equilibrium does not coincide with the planner's optimum.
2. [MIDTERM 2021 + 2023] What is the name of the following equation $\forall t, \dot{b}_t = r_t b_t + w_t - c_t$?	☐ The household's budget condition. ☐ The household's intertemporal budget condition. ☐ The household's instantaneous budget condition. ☐ The household's law of motion.
3. [MIDTERM 2021 + 2023] What is the name of the condition: $\lim_{t \rightarrow +\infty} [b_t e^{-\int_0^t (r_\tau - n) d\tau}] \geq 0$	☐ The transversality condition. ☐ The solvency constraint. ☐ The condition is wrong, because there was no n in last week's class.
4. [MIDTERM 2022 + EXAM 2022] Which is better supported empirically?	☐ Absolute convergence of log GDP per head. ☐ Conditional convergence of log GDP per head. ☐ Both, to the same extent. ☐ Neither: log GDP per head diverges across countries.
5. [MIDTERM 2022 + EXAM 2022] Absolute and conditional convergence of the $\ln(y_t)$ across countries are defined as follows:	☐ Conditional convergence is the long-run convergence of the $\ln(y_t)$ of countries with different exogenous parameters. ☐ Absolute convergence is the long-run convergence of the $\ln(y_t)$ of countries with identical exogenous parameters. ☐ Conditional convergence is the long-run convergence of the $\ln(y_t)$ of countries with identical exogenous parameters. ☐ Absolute convergence is the long-run convergence of the $\ln(y_t)$ of countries with different exogenous parameters.

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6. [Midterm 2021 + 2022 + 2023] What is the name of the equation $\frac{\dot{c}_t}{c_t} = \frac{r_t - \rho}{\sigma}$?	☐ The golden rule. ☐ The no-arbitrage condition across markets. ☐ The Keynes–Ramsey rule. ☐ The Euler equation.
7. [Midterm 2021 + 2022 + 2023] When solving the Hamiltonian, the condition on the co-state variable gives:	☐ The partial derivative of the Hamiltonian with respect to c_t is zero. ☐ The partial derivative of the Hamiltonian with respect to b_t equals $-\dot{\lambda}_t$. ☐ The transversality condition. ☐ The solvency constraint.
8. [Midterm 2021] State the first welfare theorem.	☐ If there are no externalities, markets are perfectly competitive, markets are “complete”, and the number of types of agent is finite. ☐ If there are no externalities, markets are perfectly competitive, supply and demand are non-zero on every market, and the number of types of agent is finite. ☐ If there are no externalities, supply and demand are non-zero on every market, the number of types of agent is finite, and markets satisfy: i) atomicity, ii) product homogeneity, iii) transparency, iv) free entry and exit, v) free mobility of the factors of production. ☐ Then the optimal policy is laissez-faire. ☐ Then the competitive equilibrium is a Pareto optimum.
9. [Midterm 2021 + 2022 + 2023] Without using any equation, explain very briefly why $r_t = z_t - \delta$.	☐ Firms are indifferent between producing and consuming. ☐ Firms are indifferent between borrowing on the capital market and on the asset market. ☐ Firms are indifferent between using labor and using capital. ☐ Households are indifferent between saving on the capital rental market and on the asset market.
10. [Midterm 2022 + Final 2022] Is dynamic inefficiency possible in the Solow–Swan model, and why?	☐ Yes, because the saving rate is exogenous in this model: it is not chosen optimally by households. ☐ No, because the steady state is efficient. ☐ Yes, because for a capital stock satisfying the golden rule the economy is on its balanced growth path. ☐ Yes if $s > s_{GR}$. ☐ No, because $s < s_{GR}$.

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11. [Midterm 2022] Define the balanced growth path. It is a:	☐ situation in which the initial conditions are such that all quantities are non-zero and grow at constant rates. ☐ situation in which the initial conditions are such that nothing moves any more. ☐ situation in which the time derivative of every variable is zero.
12. [Midterm 2023] What is the difference between the government and the planner?	☐ The planner is a fictitious character who tells every agent what they must do, in a fictitious setting with neither markets nor prices. The government is a public agent who can use economic policy instruments to influence the optimizing behavior of agents interacting on markets. ☐ The planner is a fictitious character who uses economic policy instruments to influence the behavior of households. ☐ The planner is a fictitious character who tells every agent what they must do, in a fictitious setting with neither markets nor prices. The government is a public agent who can use economic policy instruments to influence the optimizing behavior of households. ☐ The planner is a fictitious character who maximizes the profit of firms.
13. [Final 2022] Which of the following statements describe the solvency constraint?	☐ It states that $\lim_{t \rightarrow +\infty} b_t \lambda_t$, which measures the date-0 utility of the stock of savings as $t \rightarrow \infty$, cannot be strictly positive (otherwise the household could raise its intertemporal utility by saving less and consuming more in the long run). ☐ It requires the date-0 present value of total assets in the long run to be non-negative. ☐ It implies that in the long run total debt ($-B_T$ when $B_T < 0$) cannot grow at a rate higher than the interest rate r_T . ☐ It prevents the household from running a Ponzi scheme.
14. [Final 2022] And which of them describe the transversality condition?	☐ It states that $\lim_{t \rightarrow +\infty} b_t \lambda_t$, which measures the date-0 utility of the stock of savings as $t \rightarrow \infty$, cannot be strictly positive (otherwise the household could raise its intertemporal utility by saving less and consuming more in the long run). ☐ It requires the date-0 present value of total assets in the long run to be non-negative. ☐ It implies that in the long run total debt ($-B_T$ when $B_T < 0$) cannot grow at a rate higher than the interest rate r_T . ☐ It prevents the household from running a Ponzi scheme.